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AUG 17 2006

REMARKS/ARGUMENTS

Applicant graciously appreciates the Office's attention to the instant application. In view of the following remarks, Applicant respectfully requests reconsideration and allowance of the subject application. This amendment is 5 believed to be fully responsive to all issues raised in the May 17, 2006 Office Action.

Withdrawn Office Action of May 3, 2006

Applicant notes that a May 3, 2006 Office Action was withdrawn on or 10 about May 15, 2006 and replaced by the instant May 17, 2006 Office Action.

Notice of References Cited: Fisher et al.

Applicant notes that the cited US Patent Application to Fisher et al. (Pub. No. 2003/0175566) was not listed on the Notice of References Cited (Form 15 PTO-892), as mailed with the Office Action of May 3, 2006 or as mailed with the Office Action of May 17, 2006.

Supplemental IDS

Applicant submits herewith a supplemental IDS that discloses references 20 cited in a related foreign matter:
Japanese Patent Pub. No. H7-169,487 (Itoh, published July 4, 1995, filed December 15, 1993);

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Japanese Patent Pub. No.H7-201,354 (Namba et al., published August 4, 1995, filed December 28, 1993); and

Japanese Patent Pub. No. H4-058,463 (Komatsu, published February 25, 1992, filed June 25, 1990).

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Claim History Summary:

Claims 1-27 were originally filed. The claims were subject to a restriction requirement mailed November 25, 2005: Group I (claims 1-7, 24 and 25); Group II (claims 8-15 and 16-23); and Group III (claims 26 and 27). Group I was further restricted based on species: I-1 (claims 1-7); I-2 (claim 24) and I-3 (claim 25). On December 27, 2005, a telephonic, provisional election was made electing Group I-1 (claims 1-7). In the Office Action mailed May 17, 2006, elected claims 1-7 were rejected. Applicant reserves the right to prosecute withdrawn claims 8-27 as well as other subject matter of the instant application in one or more divisional or continuation applications.

Summary of Response

Claims 1 and 5 are currently amended and claim 2 is canceled.

Claims 8-27 remain withdrawn.

20 Claims 1 and 3-7 are pending.

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In the Specification

Applicant currently amends the specification at the paragraph beginning at page 18, line 5 to correct an inadvertent error where the terms "serial" and "parallel" were unintentionally reversed. Applicant submits that this amendment 5 does not introduce new matter.

In the Claims

Rejections under §102: Pearson

Claims 1, 4, 6 and 7

10 The Office rejected claims 1, 4, 6 and 7 under §102(e) as being anticipated by Pearson, US Patent Application Pub. No. 2004/0126635, referred to herein as the Pearson reference. Anticipation under §102 requires that each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference, see MPEP §2131.

15 Applicant currently amends independent claim 1 to include subject matter of claim 2. In other words, Applicant rewrites and now presents claim 2 as an independent claim. Claim 2 is now canceled and claim 5 is currently amended to reflect antecedent basis provided by claim 1, as currently amended.

20 As claim 2 was rejected under §103(a) only, Applicant refers the Office to evidence and arguments presented below. Applicant currently amends claim 1

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to expedite prosecution. Applicant does not acquiesce in the rejections of claims 4, 6 and 7.

Rejection under §103(a): Pearson in view of Fisher

5 The Office rejected claims 2 and 5 under §103(a) as being unpatentable over the Pearson reference in view of US Patent Application Pub. No. 2003/0175566 to Fisher et al., referred to herein as the Fisher reference.

10 Obviousness under §103 requires (i) some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (ii) a reasonable expectation of success; and (iii) that the prior art reference (or references when combined) must teach or suggest all the claim 15 limitations, see MPEP §2143.

For reasons stated below, Applicant submits that the Office has failed to 15 establish a prima facie case of obviousness for the rejection of claim 2. Claim 1, as currently amended to include the language of claim 2, recites:

A system comprising:

20 *a first fuel cell capable of providing an electrical output;*
a second fuel cell capable of providing an electrical output; and
a switch circuit that includes one or more switches for arranging
the electrical output of the first fuel cell and the electrical output of the
second fuel cell in parallel or series; and
a temperature measurement circuit capable of measuring the
temperature of the first fuel cell or the second fuel cell and providing a

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signal to the switch circuit to thereby adjust electrical output efficiency and heat production.

In the Office Action of May 17, 2006, the Office states: "Pearson do not 5 specifically teach a measurement circuit" (OA 5/17/06 at page 7). Applicant agrees. However, the Office then states:

it would have been obvious to one of ordinary skill in the art to incorporate the temperature sensor of Fisher et al into the fuel cell system of Pearson because Fisher et al teach that the control system 10 20 may verify when an appropriate operation cartridge temperature has been reached, utilizing temperature sensor 62 (Paragraphs 0067-0068).

OA 5/17/06 at pages 7 and 8.

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Applicant disagrees with this conclusion, as being unsupported by objective evidence of record. Applicant first notes that claim 1 recites "a temperature measurement circuit . . . providing a signal to the switch circuit to thereby adjust electrical output efficiency and heat production" (emphasis 20 added). As discussed in the instant application, temperature control and EMF efficiency are linked to changes in parallel and series arrangement of fuel cells (see, e.g., Figs. 8, 9 and 10 and the specification at pages 16 to 18). Applicant submits that the Pearson reference and the Fisher reference provide insufficient evidence to teach or suggest a system that includes a temperature circuit that 25 provides a signal to a parallel/series switch to thereby adjust electrical output efficiency and heat production of fuel cells. Further, the temperature measurement circuit may respond to any temperature change caused by an adjustment.

30 *Fisher Reference's Air Cooling System*

For evidence in support of the rejection of claim 2, the Office cites paragraphs [0067] and [0068] of the Fisher reference:

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5 [0067] Following a start-up condition either inputted via interface, the control system 20 selectively controls the switching device 32 to couple power bus 88 with positive terminal 90. The switching device 32 can comprise parallel MOSFET switches to selectively couple positive and negative terminals 90 and 92 to the cartridges 14.

10 [0068] For example, the control system 20 may verify when an appropriate operational cartridge temperature has been reached, utilizing temperature sensor 62. In addition, the control system 20 can verify that at least one electrical characteristic, such as voltage and/or current, of respective fuel cell cartridges 14 has been reached before closing switching device 32 to couple power bus 88 with a load 94 (FIG. 6). Such provides proper operation of the fuel cell power system 10 before coupling the bus 88 with an external load 94.

15 Applicant notes that the term "temperature" of paragraph [0068] refers to "operational cartridge temperature" as measured using temperature sensor 62.

20 To aid in understanding paragraph [0068], Applicant refers to every occurrence of the temperature sensor 62. Temperature sensor 62 appears in paragraph [0049] as part of "an air temperature control assembly 52", in paragraph [0050] as part of "monitoring circuitry 72 associated with the fan 60, temperature circuitry 74 associated with the temperature sensor 62, control circuitry 76 of air

25 passage 66, heater 77 of fuel sensor 80, and heater 78 of fuel sensor 64", and in paragraph [0060] as part of a system that "monitors the temperature of the air within the plenum 54 using a temperature monitor or sensor 62" and as "thermocouples mounted to the housings of cartridges 14 themselves" where "it may be necessary to decrease the temperature of air within the plenum to

30 provide efficient operation of fuel cell power system 10" and where "the control system 20 controls air flow in response to the temperature of the hottest cartridge 14".

35 On the basis of the foregoing evidence, Applicant submits that the Fisher reference's temperature sensor 62 is used in an air temperature control scheme. Further, with respect to efficient operation, the Fisher reference states

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in paragraph [0060]; "it may be necessary to decrease the temperature of air with in the plenum to provide efficient operation of fuel cell power system 10". Consequently, Applicant submits that the evidence of record is insufficient to render obvious the subject matter of claim 1, as currently amended.

5 Applicant further asserts that the Fisher reference's temperature sensor 62 is nothing more than a sensor for air flow based temperature control. Applicant refers the Office to Fig. 12A where "Vane Control" relies on temperature, Fig. 12B where "Fan Control" is associated with "Cooling Trend" (i.e., Cool and "FanBoost ON" or Heat and "FanBoost OFF"), and Fig. 12C
10 where, again, heating and cooling are associated with opening or closing a vane.

Fisher Reference's Shunt Controller (for shorting a fuel cell)

15 Applicant notes that paragraph [0078] of the Fisher reference refers to another temperature sensor, "temperature sensor 346", as being associated with a "shunt controller 330". Per paragraph [0079], the shunt controller 330 "is electrically coupled with the fuel cells 96 and is operable to shunt the electrical current between the anode 326 and the cathode 328 of a fuel cell 96 under predetermined operational conditions" (emphasis added). Paragraph [0086] of
20 the Fisher reference further explains the shunt controller 330:

25 [0086] In a first operational condition where a given fuel cell is performing at or below predetermined performance parameters or expectations, the controller 330 is operable to simultaneously cause the valve 38 for that fuel cell to assume a position where it terminates the supply of fuel gas to the fuel cell 96 and places the electrical switch 336 in a closed electrical condition thereby shorting the anode 326 to the cathode 328. This substantially prevents heat related damage from occurring to the fuel cell 96 as might be occasioned when the negative hydration spiral occurs.

30 Consequently, the shunt controller 330, as the name implies, shunts an anode and a cathode of a fuel cell or, in other words, it shorts the anode and the cathode of a fuel cell. Apparently such shorting has some benefits by unknown

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means: "It is also conceivable that the shorting provides a short term increase in heat dissipation that is sufficient to evaporate excess water from the diffuser layers which are mounted on the MEA" (Fisher reference at paragraph [0093]).

However, the pending claims do not recite shorting a fuel cell's anode 5 and cathode for temperature control. Instead, per claim 1, a temperature signal is used for switching two cells between series and parallel configurations "to thereby adjust electrical output efficiency and heat production".

In sum, Applicant fails to find objective evidence to teach or suggest a 10 relationship between a temperature measurement circuit, a switch for parallel/series operation and adjustment of electrical output efficiency and heat production. Thus, Applicant submits that claim 1, as currently amended, and claim 2, as originally presented, are patentable over the Pearson reference in view of the Fisher reference.

Claim 5 depends on claim 4, which depends on claim 1. Applicant 15 submits that claim 5 is patentable over the Pearson reference in view of the Fisher reference for at least the foregoing reasons.

Rejection under §103(a): Pearson in view of Fuglevand

The Office rejected claim 3 under §103(a) as being unpatentable over 20 the Pearson reference in view of USPN 6,497,974 to Fuglevand, referred to herein as the Fuglevand reference.

Applicant currently amends independent claim 1 to include subject 25 matter of claim 2. In other words, Applicant rewrites and now presents claim 2 as an independent claim. Claim 3 depends on claim 1 and, for at least this reason (see evidence and arguments presented above for claim 1), Applicant

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submits that claim 3 is patentable over the Pearson reference in view of the Fuglevand reference (without acquiescing in the rejection of claim 3).

Conclusion

5 Pending claims 1 and 3-7 are believed to be in condition for allowance. Applicant respectfully requests reconsideration and prompt issuance of the present application. Should any issue remain that prevents immediate issuance of the application, the Examiner is encouraged to contact the undersigned attorney to discuss the unresolved issue.

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Respectfully Submitted,

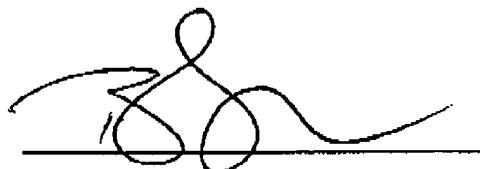
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